

Religiosity and fear of death: a three-nation comparison

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(Received 9 August 2011; final version received 20 December 2011)

Numerous studies have sought to determine if religiosity is correlated with fear of death. Findings have been anything but consistent, with reports of negative relationships, positive relationships, no relationship, and even curvilinear associations. To shed light on this still contentious issue, the present study was undertaken among college students in three countries – Malaysia, Turkey, and the United States. Overall, the patterns in all three countries were similar. When linearity was assumed, there is a substantial positive correlation between most religiosity measures and fear of death. Assuming curvilinearity added slightly to the strength of the relationships in the US data and nothing to data from Malaysia or Turkey. Other findings were that on average females were more religious and feared death more than did males, and Muslims expressed considerably greater fear than did members of any other major religion. Results were discussed in the context of a new theory – called *death apprehension theory*. Among other things, it specifically predicts that death apprehension will be positively related to most religious beliefs and practices.

Keywords: fear of death; death anxiety; belief in immortality; religion; religiosity; sex differences; buffering hypothesis; terror management theory; death apprehension theory

With the inevitability of death looming over us all, it is not surprising that many studies have sought to identify factors related to people's varying degrees of apprehension about death (for reviews see Aday, 1984; Lester, 1967; Neimeyer, Wittkowski, & Moser, 2004). Religiosity has emerged as one of the most widely studied of these factors.

Most members of established religions believe that if they abide by their particular religion's teachings, their death will be followed by a pleasurable life hereafter (Ducasse, 1961, p. 14; Eliade, 1996). This has led some researchers to propose a *buffering hypothesis* regarding the effects of religious beliefs on fear of death (Rose & O'Sullivan, 2002; Wink & Scott, 2005). According to this hypothesis, an inverse correlation between religiosity and fear of death should exist due to (a) the greater certainty highly religious people have in the reality of an afterlife and (b) more confidence that they will be rewarded with a better life hereafter.

Similar conclusions have been derived from a theory about how people psychologically deal with death, called *terror management theory* (Dechesne et al., 2003; Greenberg et al., 1990; Pyszczynski, Greenberg, & Solomon, 1999). This theory asserts that because

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contemplating one's own death can be terrifying, most people assimilate "worldviews" that provide assurance/hope of an immortal existence. Nearly all of these worldviews are religious in nature (but see the caveat below). According to proponents of terror management theory, most worldviews assume that humans differ from all other living creatures in terms of having a soul or spirit, thereby making immortality possible (Goldenberg et al., 2001).

As a caveat to what was stated above, some terror management theorists assert that some nonreligious worldviews teach that one can be immortal in symbolic rather than literal ways. *Symbolic immortality* involves leaving behind accomplishments and memories in the minds of others that continue to affect world affairs long after one's death (Cicirelli, 2002; Dechesne et al., 2003). Whether symbolic immortality is actually derived from a specific worldview seems debatable. Therefore, the present report will be limited to the relationship between fear of death and religious worldviews that assure believers that *literal* (i.e., *conscious*) *immortality* awaits us all.

Whether the buffering hypothesis is derived from terror management theory or not, studies undertaken to test it have reached conflicting conclusions. Some have provided support by finding that highly religious people fear death less than do those with little or no religious faith (Clement, 1998; Daaleman & Dobbs, 2010; Harding, Flannelly, Weaver, & Costa, 2005; Richardson, Berman, & Piwowarski, 1983; Templer, 1972). However, other studies have come to the opposite conclusion, that is, as religiosity increases so too does fear of death (Alexander & Adlerstein, 1960; Duff & Hong, 1995; Florian & Har-Even, 1983; Lazar, 2006; Power & Smith, 2008; Swenson, 1961). Still other research has found no significant relationship between religiosity and fear of death (Abdel-Khalek & Lester, 2009; Kalish, 1963; Ray & Najman, 1974; Roff, Butkeviciene, & Klemmack, 2002).

Complicating the issue further have been studies suggesting that the religiosity-fear of death relationship is actually curvilinear (Cohen et al., 2005; Nelson & Cantrell, 1980; Wink & Scott, 2005). According to these latter studies, moderately religious persons have the greatest fear and those who are either highly religious or nonreligious are roughly equal in exhibiting low fear. If such an inverted U-shape curvilinear relationship reflects how religiosity and fear of death co-vary, it could help explain some of the empirical inconsistencies that have been reported.

Two factors could be operating: First, many of the past studies have assumed linearity when conducting their analyses or have simply dichotomised their religiosity variable (i.e., religious versus nonreligious). In either case, these studies would fail to detect any curvilinearity in the religiosity-fear of death relationship that might be present. Second, several studies have been based entirely on samples of members of a single religion (e.g., Duff & Hong, 1995; Harding et al., 2005; Suhail & Akram, 2002). These studies too would be unlikely to detect any curvilinearity because they did not include nonreligious individuals in their sample. Therefore, to move toward resolving the question of how religiosity and fear of death are related, studies should carefully consider the possibility of the relationship being curvilinear, and use samples that include the full range of religious sentiments.

Another possible confounding element in research surrounding a possible link between religiosity and fear of death is gender. Numerous studies have demonstrated that females fear death more than do males (Dattel & Neimeyer, 1990; Ens & Bond, 2005; Lonetto & Templer, 1986; Pierce, Cohen, Chambers, & Meade, 2007; Thorson & Powell, 1993). Furthermore, females have nearly always been shown to be considerably more religious than males (reviewed by Ellis et al., 2008, pp. 501–504; Miller & Stark, 2002; Roth & Kroll, 2007). The only exception to this later generalisation involves belief in life after death.

For this aspect of religiosity, evidence of any sex differences has been mixed (Berman & Hays, 1973; Vitulli & Luper, 1998). Overall, failing to control for sex differences could interfere with efforts to identify relationships between religiosity and fear of death.

One more noteworthy aspect of prior studies on religiosity and fear of death has been that samples have been largely limited to Western, predominantly Christian, countries (for exceptions see Abdel-Khalek, 1986; Morris & McAdie, 2009; Wen, 2010), and none to our knowledge have actually made cross-cultural comparisons. It is not unreasonable to think that the nature of any religiosity-fear of death associations will vary from one country (and even from one religion) to another.

The present study was undertaken to test the buffering hypothesis, which predicts that religiosity will be inversely correlated with fear of death due to religious people having greater faith that they will spend eternity in heaven. We also sought to determine whether relationships between religiosity and fear of death might differ according to gender, cultures, and specific religions. Finally, we made a focused attempt to identify any curvilinear patterns that might exist in the correlations between religiosity and fear of death.

Methods

Data for the present study were collected simultaneously from convenience samples consisting primarily of undergraduate college students in Malaysia, Turkey, and the United States. The respondents were at the following institutions or locations:

Malaysia – University of Malaya (2125 respondents), residents of Kuala Lumpur in a police station waiting to appeal or pay a traffic violation (269 respondents) (2394 total respondents)

Turkey – Gazi University in Ankara (265 total respondents)

United States – Boise State University (76 respondents), California State University at Fullerton (251 respondents), Evangel University (269 respondents), Minot State University (149 respondents), Pennsylvania State University (110 respondents), University of Missouri (258 respondents), and University of Texas at San Antonio (178 respondents) (1291 total respondents)

Demographics

Demographics for those sampled in each of the three countries are provided in Table 1. The high female-to-male ratio in our Malaysian and US samples largely reflect the fact

Table 1. Basic demographics for respondents in each of the three countries.

	Malaysia		Turkey		United States	
	Males	Females	Males	Females	Males	Females
Average age	21.0	21.2	24.6	27.6	20.1	19.9
Aver. # of siblings	3.88	4.14	2.50	2.33	1.66	1.50
Aver. # of half-siblings	0.33	0.19	0.06	0.35	0.62	0.73
Percent never married	95.4%	94.3%	84.7%	73.4%	92.5%	96.1%
Total	826	1568	201	64	472	819

that substantially more females than males are currently attending college in both countries (DiPrete & Buchmann, 2006; Firebaugh & Dorius, 2010). In Turkey, on the other hand, male college students still outnumber females, although only by about 7% (Dayioglu & TÜRÜT-Asik, 2007, p. 275). In the sample obtained for this study, the proportion of Turkish students who were males was much greater due to our having recruited mainly students majoring in mathematics and engineering.

Questions regarding fear of death and religiosity

The questionnaire used in the present study was developed and refined in English. Then it was translated into Bahasa Malaysia and Turkish. To ensure that the translations were comparable with the original English version, the latter two questionnaires were back-translated into English until all discrepancies were eliminated.

All three questionnaires were four pages in length and covered a wide variety of topics, only a few of which were part of the present study. The main variables focused on in the present study were fear of death and religiosity. To measure *fear of death*, participants were asked to use an 11-point rating scale ranging from 0 = “not at all” to 10 = “the most extreme degree possible.” Seven aspects of *religiosity* were measured in which participants provided self-ratings also using 11-point scales:

- (1) Belief in god (supreme being)
- (2) Belief in immortality (life after death)
- (3) Importance of religion to your daily life
- (4) Religious fundamentalism
- (5) Obey the teachings of a specific religion
- (6) Active in religious observances
- (7) Religious strictness of parents while growing up

All but the last of these items appeared in a table contained within the questionnaire along with 26 other items. The table was preceded with the following instructions: *Being as objective as possible, rate yourself on all of the following traits: (0 meaning “not at all” to 10 meaning “the most extreme degree possible”).* One other item appeared in a different section of the questionnaire and was phrased as follows: *How strictly did your parents enforce any religious teachings? (Rate from 1 = not at all to 10 = to an extreme degree).* (Note that in the case of the questionnaire administered in Turkey, all of the response options only ranged from 1 to 10.)

The seven religiosity measures are arranged throughout this report in terms of their focus. As shown in the list above, the initial items pertained to personal belief aspects of religiosity while the later items have more to do with public expression of religiosity or religious socialisation.

To assess the validity of the seven religiosity measures, the responses were factor analysed. As shown in Table 2, loadings for all three countries were above 0.500. Cronbach’s alphas were calculated and are presented in Table 2. These coefficients likewise suggest that the seven items are all assessing a similar overall factor. The idea that religiosity constitutes a single underlying factor has been reported elsewhere (Lewis, Shevlin, McGuckin, & Navratil, 2001).

Regarding our *fear of death* measure, basic descriptive statistics are presented in Table 3. One can see that the mean level of fear was substantially lower in the United States than in Malaysia or Turkey (a difference that will be discussed in more detail later in

Table 2. Factor analysis and Cronbach's alpha for the seven measures of religiosity for each country.

Religiosity measures	Single factorial components		
	Malaysia	Turkey	United States
Belief in God	0.807	0.705	0.768
Belief in immortality	0.526	0.732	0.678
Importance of religion	0.934	0.854	0.927
Religious fundamentalism	0.919	0.773	0.849
Obey religious teachings	0.935	0.888	0.918
Active in religious observances	0.684	0.858	0.895
Parental religious strictness	0.927	0.531	0.688
Cronbach's alpha	0.914	0.874	0.919

Table 3. Descriptives for the single-item fear of death measure according to country.

Descriptives	Country		
	Malaysia	Turkey	United States
Mean	6.69	6.28	4.66
Standard deviation	3.33	3.13	3.10
Variance	10.39	9.82	9.62
Skewness (& std. error)	−0.683 (0.05)	−0.33 (0.15)	0.10 (0.07)
Kurtosis (& std. error)	−0.75 (0.10)	−1.20 (0.30)	−1.12 (0.14)
N	2,357	258	1,280

this report). Table 3 shows that the measures of dispersion are similar for all three countries.

Religious affiliation

In addition to rating themselves on the seven religiosity questions, participants were asked to identify the particular religion (if any) with which they affiliated. Some of the less common religions were grouped with others according to similarities in beliefs and rituals. Thus, we ended up identifying the following 10 religious categories: Buddhist (including Taoist), Christian (nonspecific), Catholic, Protestant, Hindu (including Sikh), Islam, Jewish, Pagan, nonreligious (including free thinker, atheist, agnostic, deist, unsure), and no response (or unintelligible response). For the United States sample, sufficient numbers of Christians identified themselves as either Catholics or Protestants to allow us to conduct some separate analyses according to these two subcategories.

Table 4 shows how the participants in each of the three countries were distributed regarding the ten religious groupings. One can see that Islam was the single most common religion in Malaysia and Turkey, while Christianity predominated in the United States. The virtual unanimity of Turkish students identifying themselves as Muslim is in

Table 4. Percentages (and numbers) of males and females according to religious affiliation in each of the three countries.

Religions/religious groupings	Malaysia		Turkey		United States	
	Males	Females	Males	Females	Males	Females
Buddhist	14.2% (117)	17.4% (273)	–	–	–	0.7% (5)
Christian (nonspecific)	10.8% (90)	8.5% (132)	–	–	38.9% (162)	49.7% (355)
Catholic	–	–	–	–	25.0% (104)	23.2% (166)
Protestant	–	–	–	–	7.9% (33)	6.7% (48)
Hindu/Sikh/Punjabi	5.0% (41)	5.0% (79)	–	–	0.2% (1)	0.3% (2)
Islam/Muslim	60.3% (498)	63.8% (1000)	100% (201)	99.8% (63)	1.7% (7)	1.5% (11)
Jewish	–	–	–	–	0.5% (2)	1.5% (11)
Pagan	0.5% (4)	0.1% (2)	–	–	–	–
Nonreligious	3.0% (25)	2.2% (34)	–	–	23.3% (97)	13.9% (99)
No response	6.2% (51)	3.1% (48)	–	0.2% (1)	2.4% (10)	2.4% (17)
Total	826	1568	201	64	416	714
						3789

accordance with research showing that 99% or more of all Turks currently affiliate with Islam (Browne & Kim, 1993, p. 622; Fuller, 2008).

The analysis

The analysis first involved comparing males and females regarding fear of death and the seven religiosity measures in all three countries using *t*-tests. We then assessed fear of death and the religiosity measures between different religious groups for two of the three countries using ANOVA (these comparisons were not possible for Turkey because of this country's very high religious homogeneity).

The next stage in our analysis involved correlating fear of death by country and by sex with the seven religiosity measures. Finally, to assess the possibility of some of the relationships between fear of death and religiosity being curvilinear rather than linear we first graphically plotted the average fear response for the full array of responses regarding the seven religiosity measures for all three countries. Thereafter, we calculated and compared the quadratic regressions and linear regressions for the relationships between fear of death and the seven measures of religiosity.

Results

Comparisons by gender

Before giving attention to the buffering hypothesis, we will report on gender differences in fear of death and religiosity. This is because, as mentioned in the introduction, gender might have a bearing on why studies have reached conflicting conclusions about how religiosity and fear of death are related.

Table 5 compares the average responses to the questions pertaining to fear of death and to the seven measures of religiosity according to gender. One can see that in Malaysia and the United States, fear of death and nearly all of the religiosity measures were significantly higher for females than for males. These patterns are consistent with nearly all of the prior literature (Ellis et al., 2008, pp. 501–504). The only exception was belief in immortality, which was significantly higher for Malaysian males than for Malaysian females.

For the Turkish sample, however, only one significant sex difference was found regarding religiosity and fear of death: that is, females reported their parents having provided them with stricter religious training than was true for the males. The failure of other significant sex differences may be at least partially attributable to the considerably smaller sample sizes in Turkey. However, such an explanation is made less likely by noting that in four of the seven measures of religiosity, the religiosity scores for males were actually higher than for females.

Comparisons according to religion

In Table 6, average fear of death and the seven religiosity self-ratings are presented according to country and religious affiliation. Regarding religious affiliation, only groups consisting of at least 50 members were included in the comparisons shown. As the ANOVA calculations indicate, within both Malaysia and the United States, very significant differences in fear of death and in each of the religious beliefs exist.

Table 5. Sex differences in average self-rated fear of death and religiosity in the United States, Malaysia, and Turkey. (Positive *t*-scores indicate that males were higher; negative *t*-scores show that females were higher).

Country	Gender	<i>N</i>	Fear of death [<i>M</i> & (<i>SD</i>)]	Religiosity [<i>M</i> & (<i>SD</i>)]						
				Belief in God	Belief in immortality	Importance of religion	Funda-mentalism	Obeys relig. teachings	Active in religion	Parental relig. strict
Malaysia	Males	826	6.13 (3.40)	8.39 (2.62)	7.83 (3.03)	7.14 (2.81)	7.32 (2.93)	6.92 (2.81)	6.52 (2.90)	7.57 (2.51)
	Females	1,568	6.99 (3.08)	8.72 (2.28)	7.57 (3.36)	7.58 (2.60)	7.90 (2.57)	7.37 (2.60)	7.07 (2.62)	7.85 (2.26)
Turkey	<i>t</i> -score		-5.99***	-3.02***	+1.96*	-3.72***	-4.67***	-3.76***	-4.63***	-2.68***
	Males	201	6.14 (3.21)	8.87 (2.10)	8.67 (2.14)	7.23 (2.14)	5.80 (2.62)	6.56 (2.45)	6.46 (2.20)	2.68 (0.42)
United States	Females	64	6.71 (2.82)	8.71 (2.29)	8.94 (1.57)	7.46 (2.47)	5.76 (2.59)	6.23 (2.87)	6.30 (2.60)	3.31 (0.19)
	<i>t</i> -score		-1.34	+0.45	-0.99	-0.65	+0.07	+0.46	+0.45	-2.82***
	Males	416	4.68 (3.13)	7.00 (3.50)	6.32 (3.58)	4.96 (3.42)	5.01 (3.60)	4.90 (3.77)	4.46 (3.60)	5.02 (2.88)
	Females	714	5.42 (2.80)	7.50 (3.12)	6.80 (3.11)	5.75 (3.30)	5.63 (3.56)	5.80 (3.85)	5.31 (3.54)	5.73 (3.07)
	<i>t</i> -score		-3.94***	-2.39**	-2.25*	-3.75***	-2.78***	-3.83***	-3.81***	-3.88***

Note: **p* < 0.05; ***p* < 0.01; ****p* < 0.005; *****p* < 0.001.

Table 6. Average self-ratings regarding fear of death and the seven religiosity measures by country and religious affiliation. (ANOVA values are reported for Malaysia and the United States, but were not possible for Turkey in light of its religious homogeneity).

Country	Religious affiliation	N	Fear of death [<i>M</i> & (<i>SD</i>)]	Religiosity [<i>M</i> & <i>SD</i>]						
				Belief in God	Belief in immortality	Importance of religion	Funda-mentalism	Obey religious teachings	Active in religion	Parental religious strictness
Malaysia	Buddhist	390	5.77 (2.70)	6.09 (2.44)	6.60 (2.42)	5.45 (2.51)	8.70 (2.36)	5.52 (2.41)	4.96 (2.50)	6.48 (2.06)
	Christian	222	4.43 (3.32)	8.82 (2.14)	7.25 (3.41)	7.27 (2.78)	7.06 (2.91)	6.84 (2.91)	6.45 (3.07)	6.39 (2.79)
	Hindu	120	4.89 (3.40)	8.81 (2.22)	7.27 (3.24)	7.26 (2.93)	7.49 (2.87)	7.49 (2.71)	7.05 (2.93)	7.66 (2.38)
	Islam	1,498	7.66 (2.90)	9.47 (1.49)	8.27 (3.19)	8.39 (1.82)	8.77 (1.72)	8.13 (1.88)	7.83 (1.90)	8.67 (1.54)
	Nonreligious	59	3.95 (2.92)	5.97 (4.06)	5.97 (3.81)	3.41 (3.47)	3.20 (3.67)	2.99 (3.60)	2.78 (3.46)	4.35 (3.32)
	ANOVA (<i>F</i> -score)		106.64 <i>p</i> > 0.000	277.98 <i>p</i> > 0.000	30.63 <i>p</i> > 0.000	200.82 <i>p</i> > 0.000	130.23 <i>p</i> > 0.000	175.46 <i>p</i> > 0.000	185.04 <i>p</i> > 0.000	203.23 <i>p</i> > 0.000
Turkey	Islam	264	6.31 (3.01)	8.86 (2.16)	8.79 (1.82)	7.33 (2.19)	5.81 (2.60)	6.51 (2.55)	6.42 (2.31)	3.11 (0.34)
United States	Christian* (nonspecific)	554	5.22 (3.00)	8.05 (2.46)	7.66 (2.48)	7.30 (2.56)	7.42 (2.63)	7.85 (3.00)	7.06 (2.85)	6.80 (2.69)
	Catholic*	270	5.41 (3.21)	8.29 (2.74)	6.81 (3.44)	5.10 (2.70)	4.92 (2.66)	4.51 (2.91)	4.23 (2.84)	5.15 (2.33)
	Protestant*	81	5.23 (3.06)	8.52 (2.10)	6.70 (3.40)	5.25 (2.56)	5.03 (3.24)	4.94 (2.90)	4.49 (3.03)	4.78 (2.55)
	Nonreligious	196	4.45 (2.95)	3.59 (3.65)	3.74 (3.23)	1.46 (2.45)	1.45 (2.70)	1.04 (2.10)	1.15 (2.26)	2.90 (2.57)
	ANOVA (<i>F</i> -score)		4.20 <i>p</i> > 0.006	149.13 <i>p</i> > 0.000	85.47 <i>p</i> > 0.000	252.99 <i>p</i> > 0.000	245.35 <i>p</i> > 0.000	301.11 <i>p</i> > 0.000	236.18 <i>p</i> > 0.000	117.36 <i>p</i> > 0.000

Notes: *Those counted as Catholics and Protestants specifically identified themselves as such. Persons who identified themselves as Orthodox Christians, LDS members, or Christians in general were subsumed under "Christian (nonspecific)."

The religious group whose members were most fearful of death was Islam, both in Malaysia ($M=7.66$) and in Turkey ($M=6.31$). Least fearful were those who were nonreligious, both in the US ($M=4.45$) and especially in Malaysia ($M=3.95$). Christians were roughly intermediate in their expressed fear of death both in Malaysia ($M=4.43$) and in the United States (Christians unspecified, $M=5.22$; Catholics, $M=5.41$; and Protestants, $M=5.23$). Malaysian Buddhists and Hindus were also intermediate, with means of 5.77 and 4.89, respectively.

Correlations between fear of death and religiosity

The primary aim of the present study was to determine if, as suggested by the buffering hypothesis, inverse correlations exist between religiosity and fear of death. Of course, one can begin to anticipate the answer by noting that in Table 6 the lowest fear was expressed by those who did not consider themselves to be members of any organised religion. Nevertheless, the specific answers to the question are provided in Table 7 for males and females separately as well as for the sexes combined in each of the three countries. One can see that in all but one instance, the correlations were positive, which is contrary to the buffering hypothesis. In other words, the individuals who considered themselves most religious expressed greater, not lesser, fear than those who were relatively nonreligious, regardless of any specific religion with which they may have been affiliated.

The correlations between religiosity and fear of death were strongest and most evident in Malaysia. In the United States, only one of the correlations was statistically significant for females, while all but one of them were significant for males. The fewest significant correlations were among the Turkish sample, probably due partly to the smaller sample size obtained from this country as well as to this country's religious homogeneity. Rather surprising to us was that the weakest religiosity correlate for fear of death across all three countries was the certainty with which respondents reported believing in God.

Regarding differences according to sex, one can compare the average correlation coefficients for males and females in each of the three countries (in the bottom row of Table 6). Doing so reveals no greater tendency for males or females to exhibit associations between religiosity and fear of death except in the United States, where the relationships were substantially stronger for males than for females.

Curvilinearity

As noted in the introduction, some prior studies have concluded that the relationship between religiosity and fear of death is actually curved, with moderately religious persons being more fearful than either those who are highly religious or relatively nonreligious (e.g., Cohen et al., 2005; Wink & Scott, 2005). Such a correlation would conform to an inverted U-shape quadratic regression line rather than a linear regression line.

To explore the possible presence of curvilinear relationships between religiosity and fear of death, we applied curve estimations to the data separately for all three countries. The results are shown in Table 8. It shows that in Malaysia, the F -scores are all higher for the linear models than for the curvilinear models. Similarly for Turkey, the F -scores were all at least slightly higher for the linear models with the single exception of belief in immortality, for which the F -score was higher for the curvilinear model, although the fit was not statistically significant.

Table 7. Correlations between fear of death and each of the seven measures of religiosity according to sex and for the complete sample in each of the three countries.

	Fear of death								
	Malaysia			Turkey			United States		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Belief in God	0.192****	0.263****	0.240****	0.021	-0.042	0.003	0.093	0.061	0.082**
Belief in immortality	0.300****	0.284****	0.223****	0.013	0.111	0.036	0.207****	0.097**	0.136****
Importance of religion	0.207****	0.227****	0.227****	0.187**	0.297*	0.216****	0.198****	0.015	0.099****
Religious fundamentalism	0.300****	0.284****	0.299****	0.314****	0.091	0.264****	0.207****	0.023	0.105****
ObeY religious teachings	0.230****	0.232	0.238****	0.203	0.453**	0.267**	0.256****	0.029	0.128****
Active in religious observances	0.240****	0.214****	0.234****	0.228****	0.197	0.217****	0.167***	0.001	0.079**
Parental religious strictness	0.246****	0.246****	0.251****	0.236****	0.004	0.155*	0.118*	0.052	0.089****
Coefficient averages by sex	0.245	0.250	$t=0.26$	0.172	0.165	$t=0.17$	0.178	0.033	$t=5.61****$

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.005$; **** $p < 0.001$.

Table 8. Relative strengths of the linear versus the quadratic regressions regarding fear of death and each of the seven measures of religiosity in each country.

Country	Religiosity measure	Equation	Statistics				
			R^2	F	Beta 1	Beta 2	Signif.
Malaysia	Belief in God	Linear	0.058	143.501	0.320	0.019	0.000
		Quadratic	0.059	73.613	0.078		0.000
	Belief in immortality	Linear	0.050	120.610	0.221	0.045	0.000
		Quadratic	0.065	80.348	-0.280		0.000
	Importance of religion	Linear	0.052	127.552	0.273	-0.034	0.000
		Quadratic	0.059	72.879	0.679		0.000
	Religious fundamentalism	Linear	0.089	228.592	0.354	2.89E	0.000
		Quadratic	0.089	114.247	0.354		0.000
	Obey religious teachings	Linear	0.057	141.173	0.286	-0.028	0.000
		Quadratic	0.062	77.257	0.609		0.000
	Active in religious observances	Linear	0.055	135.931	0.276	-0.037	0.000
		Quadratic	0.064	79.772	0.693		0.000
	Parental religious strictness	Linear	0.063	155.992	0.334	0.000	0.000
		Quadratic	0.063	77.964	0.350		0.000
Turkey	Belief in God	Linear	0.000	0.002	0.004	-0.001	0.964
		Quadratic	0.000	0.001	0.013		0.999
	Belief in immortality	Linear	0.001	0.332	0.055	-0.058	0.565
		Quadratic	0.010	1.249	0.868		0.289
	Importance of religion	Linear	0.047	12.274	2.93	0.039	0.001
		Quadratic	0.053	7.025	-0.203		0.001
	Religious fundamentalism	Linear	0.069	19.035	0.315	-0.042	0.000
		Quadratic	0.079	10.868	0.766		0.000
	Obey religious teachings	Linear	0.071	6.609	0.012	0.028	0.298
		Quadratic	0.075	3.461	0.036		-0.027
	Active in religious observances	Linear	0.047	12.654	0.271	-0.025	0.000
		Quadratic	0.050	6.725	0.575		0.001
	Parental religious strictness	Linear	0.024	6.167	0.168	0.081	0.014
		Quadratic	0.063	8.475	-0.730		0.000
United States	Belief in God	Linear	0.000	0.002	-0.001	-0.035	0.967
		Quadratic	0.008	5.089	0.382		0.006
	Belief in immortality	Linear	0.000	0.607	0.019	-0.034	0.001
		Quadratic	0.011	6.910	0.388		0.000
	Importance of religion	Linear	0.003	3.432	-0.047	-0.062	0.064
		Quadratic	0.039	25.738	0.583		0.000
	Religious fundamentalism	Linear	0.000	0.352	-0.015	-0.027	0.533
		Quadratic	0.008	4.766	0.244		0.009
	Obey religious teachings	Linear	0.001	1.300	-0.028	-0.053	0.254
		Quadratic	0.027	17.748	0.480		0.000
	Active in religious observances	Linear	0.004	5.668	-0.059	-0.050	0.017
		Quadratic	0.028	18.074	0.420		0.000
	Parental religious strictness	Linear	0.001	0.865	-0.028	-0.026	0.352
		Quadratic	0.004	2.675	0.233		0.069

A very different pattern emerged for the United States data. The F -scores for the quadratic equations were considerably greater than were the F -scores for the linear equations for all seven religiosity measures. Also, notice that all seven of the Beta 2 values were negative, indicating that the shape of the quadratic curves conformed to an inverted

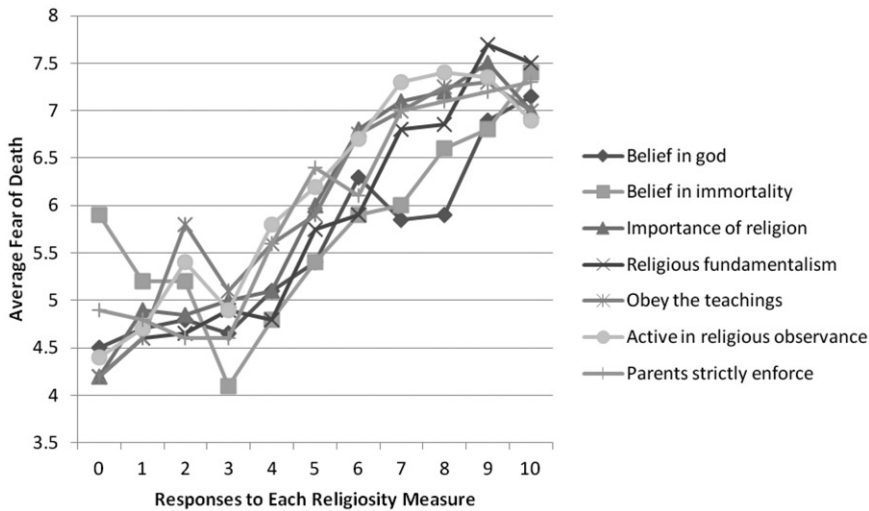


Figure 1. Average fear of death expressed relative to their responses regarding each of the seven religiosity measures for the Malaysian sample.

U-shape. Furthermore, all of the p -values for the quadratic equations were consistently lower than for the linear equations, and in only one case did the p -value for the quadratic not fall far below 0.05 (i.e., 0.069 for parental religious strictness).

Figures 1, 2, and 3 provide a visual representation of the patterns that appear in Table 8. One can see that for Malaysia and Turkey, there is little to no evidence of curvilinearity in the relationships between average fear of death and the various measures of religiosity. However, the graph for the United States clearly shows that while fear of death is lowest for those who are least religious, there is a definite tendency for those who are intermediate in religiosity to fear death more than individuals who are most religious.

Discussion

The primary purpose of the present study was to reassess the relationship between religiosity and fear of death across cultures with a special emphasis on determining the merits of the buffering hypothesis. In essence, this hypothesis states that because highly religious persons will have the greatest confidence that they will enjoy an eternity of happiness hereafter, religiosity should be inversely (negatively) correlated with fear of death.

Our findings seriously challenge the buffering hypothesis. At least among college students in three different countries, a positive, rather than a negative, correlation was found between most measures of religiosity and fear of death.

As noted in the introduction, the past literature on how religiosity relates to fear of death has been remarkably inconsistent. There are several possible methodological explanations for the conflicting findings. Some of the inconsistencies may be attributable to the fact that many different operational measures of religiosity and fear of death have been utilised over the years. Other factors may include the confounding influences of factors such as gender, age, and health. For example, terminally ill patients may differ

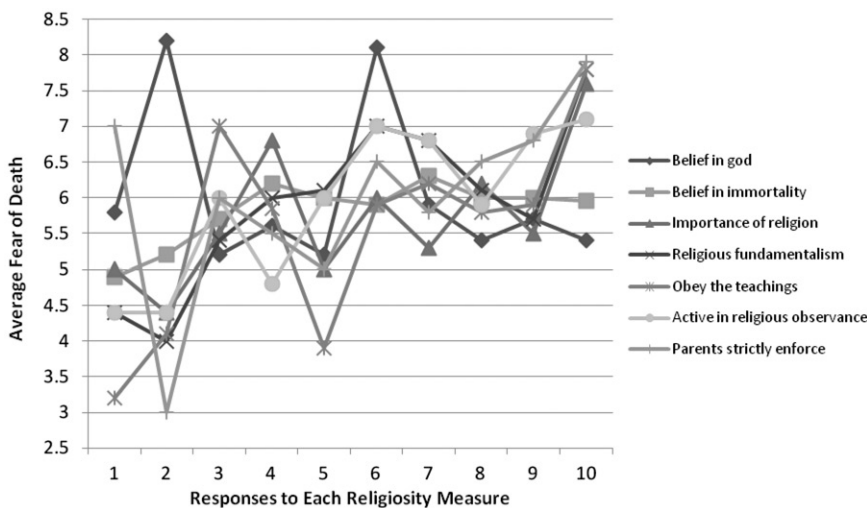


Figure 2. Average fear of death expressed relative to their responses regarding each of the seven religiosity measures for the Turkish sample.

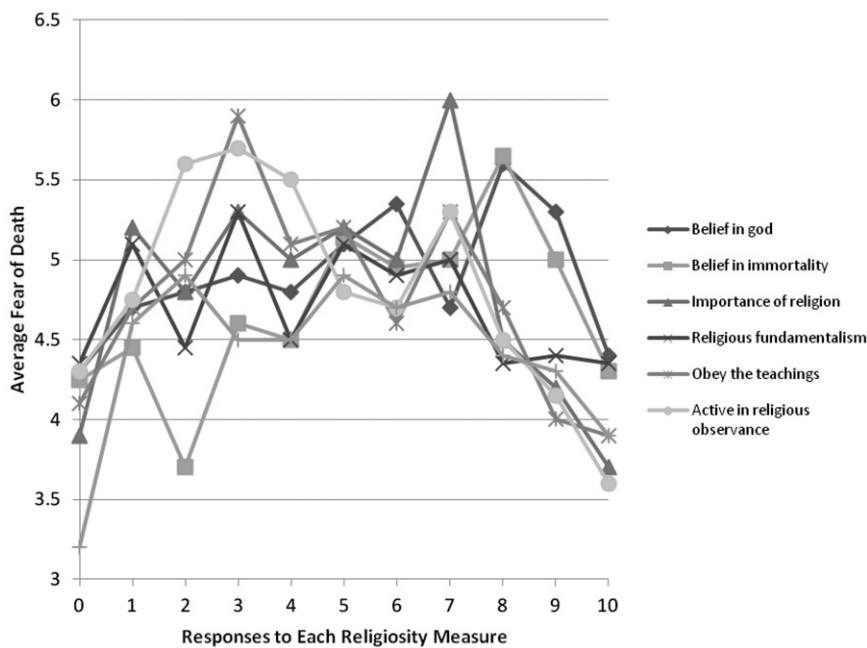


Figure 3. Average fear of death expressed relative to their responses regarding each of the seven religiosity measures for the United States sample.

from healthy college students in terms of both religiosity and fear of death. Also, as noted earlier, the samples utilised in some studies have been limited to members of a single religion (e.g., Duff & Hong, 1995; Florian & Mikulincer, 1992; Harding et al., 2005; Suhail & Akram, 2002). This would have the effect of not measuring the full range of religiosity that exists in general populations.

Another possible factor may be of a theoretical nature since no formal explanations yet offered for a religiosity-fear of death relationship has specifically predicted that the relationship *should* be positive. Without a theory to explain why a positive correlation might exist, researchers who have found such a pattern may have hesitated to publish their findings or, if they did, run a greater risk of editorial rejection. In this light, we wish to offer a theory that does predict a positive relationship between religiosity and fear of death.

Theoretically predicting a positive correlation between religiosity and fear of death

The theory to be proposed is called the *death apprehension (DA) theory*. It is premised on the assumption that being fearful of one's eventual death is virtually unavoidable because (a) dying is often accompanied by considerable pain and (b) death brings an end to the pleasures of life including all of those derived from social and family relationships. These will be called the *mundane aspects of death*, and they are not assumed to vary according to an individual's religiosity.

DA theory asserts that as pain (or ill health) increase, fear of death will decrease. And, as the pleasures of life (including those of a social nature) decrease, fear of death will also decrease. The rationale behind these predictions is that death becomes a less threatening alternative to one's existence as feelings of pain escalate and as life's pleasures wane.

Turning to religion, DA theory assumes that it is the main source of people's belief in an afterlife, an assumption supported by findings from at least two studies (Berman, 1974; Falkenhain & Handal, 2003). Belief in an afterlife, in turn, contributes to one's fear of death because of the uncertainty of the outcome in terms of one's "worthiness for eternal salvation." This concern will be especially acute among adherents to religions that portray God as highly demanding and vindictive. Consequently, assuming the mundane aspects of death are held constant, one should be able to predict an individual's fear of death by measuring four variables: (a) belief in a demanding and vindictive God, (b) certainty about the reality of an afterlife, (c) obedience to religious teachings, and (d) certainty of divine forgiveness. If belief in a demanding and vindictive God and certainty about the reality of an afterlife are both high, fear of death should also be high. This fear should be mitigated slightly for those individuals who are (a) confident that they have obeyed virtually all of teachings and commandments of their particular religion throughout life, or (b) are confident that God has forgiven all infractions committed.

The above arguments can be expressed with the following formula:

$$DA = \frac{PI}{PB} + \frac{DVG(AR)}{OTPR(CDF)}$$

where

DA – death apprehension (fear of death, death anxiety)

PI – feelings of pain & ill health

PB – experiences of pleasure & social bonding

DVG – belief in a demanding and vindictive God

AR – belief in the reality of an afterlife

OTPR – obeying the teachings of a particular religion

CDF – certainty of divine forgiveness

We should add that DA theory does not exclude the possibility of genetic influences. In this regard, twin studies have suggested that people vary in their susceptibility to religious conversion (Bouchard, Lykken, McGue, Segal, & Tellegen, 1990; Bradshaw & Ellison, 2008; Vance, Maes, & Kendler, 2010). And, it is conceivable that some of the genes promoting religiosity are also contributing to fear of death.

Having been created *post hoc*, DA theory is obviously in need of careful empirical scrutiny. As the following subsections show, parts of the theory can be assessed with variables that were included in the present study.

Religious differences in fear of death

DA theory hypothesises that belief in a demanding and vindictive God is a key religious contributor to death apprehension. In this regard, Islam seems to make more demands than the other world's major religions. Its members are required to pray five times daily, fast for 30 days each year, and dress modestly in public. Furthermore, Muslims have numerous consumption and recreational prohibitions (e.g., no alcohol or pork consumption, no gambling, and no wearing of gold or silk by men). And, according to the strictest interpretations of the Koran, pious Muslims avoid listening to music and dancing in the presence of strangers (Haynes, 1998; Otterbeck, 2008).

In contrast, Christians and members of most other religions have far fewer proscriptive and restrictive rules. This is especially true of many of the liberal Protestant denominations, among whom there are no requirements regarding attending religious services, fasting, confessing sins, or clothing prohibitions.

Furthermore, God is generally depicted as more forgiving in Christian teaching than in Islamic teaching. As Kirkpatrick and Navarrete (2007) observed, "God and Jesus appear in the New Testament as generally comforting, nurturing figures similar to parents or friends..." (p. 293). Islamic characterisations of God are much more akin to what one finds in classical Judaism scriptures than in most parts of the Christian New Testament.

According to Christian teaching, going to heaven is assured by simply accepting Jesus as one's saviour, and forgiveness for one's sins can even be obtained in the final moments of life. In Islam, death-bed repentances are considered "inauthentic" and "not offered" (Rye et al., 2000, p. 92).

Making comparisons between these two religions within the context of DA theory would predict that fear of death among Muslims should be considerably higher than among Christians. While "beliefs in a demanding and vindictive God" was not measured, we suggest that Christian versus Muslim membership can be used as a proxy for such beliefs. This suggestion needs to be carefully tested, but it is consistent with observations shown in Table 6, and from at least one prior study (Morris & McAdie, 2009) indicating that Muslims self-report having substantially greater fear of death than do Christians (also see Abdel-Khalek, 1986).

DA theory would predict that individuals who are nonreligious would be even less fearful of death than Christians because few atheists, agnostics, and free thinkers believe in either a "demanding and vindictive God" or the "reality of an afterlife." In other words, the variables comprising the numerator of the equation would be near zero for persons who are nonreligious. As one can see, Table 6 generally supports the prediction that nonreligious individuals should be among the lowest in terms of death anxiety.

Among Christians, one would expect members of liberal denominations to fear death less than Christians who are fundamentalists. Unfortunately, our samples of specific

Protestant denominations were too small to provide a valid test of this particular prediction.

National differences in fear of death

DA theory leads one to expect to find national differences in fear of death roughly in accordance with the prevalence of persons affiliating with each religion in the countries being compared. For example, people living in countries with high proportions of Muslims should fear death more than countries with high proportions of Christians, and people in predominantly Christian countries should fear death more than those with high proportions of nonbelievers. Our study provides general support for this prediction since students in Malaysia and Turkey expressed greater fear of death than students in the United States. However, this support is tempered by noting that the average fear of death in Malaysia (where roughly 60% of the population is Muslim) was in fact slightly higher than the fear expressed in Turkey (which is 99% Muslim, albeit possibly of a somewhat more “liberal” form).

Gender differences in fear of death

Based on our data from Malaysia and the United States, we have confirmed prior studies that females fear death more than do males (Dattel & Neimeyer, 1990; Ens & Bond, 2005; Lonetto & Templer, 1986; Pierce et al., 2007; Thorson & Powell, 1993). However, among Turkish students, no significant sex difference in fear of death was found. This latter finding needs verification in light of the relatively small sample size obtained from Turkey (especially for females).

For Malaysia and the United States, females were also shown to be more religious than males, just as nearly all other pertinent studies have shown (reviewed by Ellis et al., 2008, pp. 501–504; Miller & Stark, 2002; Roth & Kroll, 2007). The only exception came from Malaysia where males expressed greater confidence in the reality of an afterlife than did females (Table 4). Other studies also indicate that belief in an afterlife may be an exceptional religious belief in terms of reflecting the usual sex difference in religiosity (Berman & Hays, 1973; Vitulli & Luper, 1998).

In the case of Turkey, we found no significant sex differences in any of the religiosity measures except for females reporting that they had been raised in stricter religious households than males. As with our failing to find a significant sex difference in fear of death among the Turkish students the absence of significant sex differences in religiosity needs verification using a larger and more representative sample.

DA theory offers a way to explain sex differences in fear of death if it can be shown that sex differences exist in how God is conceptualised regarding His being demanding and vindictive. There may also be sex differences in terms of the extent to which religious teachings are obeyed that could help to account for sex differences in fear of death. As shown in the formula for DA theory, elevating DVG combined with a lowering of OTPR would result in DA being higher.

Age and health differences in fear of death

As noted earlier, DA theory predicts that pain and ill health should be negatively associated with fear of death. Therefore, to the extent that health deteriorates with age, fear of death should diminish as one gets older and especially as death becomes eminent.

Obviously, DA theory makes a number of predictions besides those addressed in the present study.

Limitations

In bringing this discussion to a close, limitations of the present study need to be acknowledged. One of its weaknesses involves our having used just a single question to measure *fear of death*. Doing so stands in contrast to most other studies of fear of death (or death anxiety) which combine responses to multiple questions into a single scale (reviewed by Lehto & Stein, 2009). However, ours is far from the only study to have been based on a single fear of death question (e.g., Britton et al., 2008; Morris & McAdie, 2009, p. 117; Shackelford & Agostinelli, 2003), and there may actually be advantages in the clarity of responses to a simple straight-forward question, especially in a cross-cultural context. However, if we were to repeat the study, we would ask at least a few additional questions pertaining to the specific aspects of death that people fear the most.

The main reason for our having used a single item for this crucial variable involved the fact that the questionnaire in which the question was embedded was designed by a consortium of researchers with diverse interests regarding the eventual analyses to be performed on the resultant data set. Furthermore, in designing the questionnaire, we had concerns about translation equivalencies were we to have probed deeply into the precise nature and extent of people's feeling of death apprehension.

Other limitations of this study would include our having measured only seven aspects of religiosity. Future researchers should consider including measures of prayer and believes that God is demanding and vindictive rather than tolerant and forgiving. Also, belief about various supernatural entities besides God - such as heaven and hell and even angels and devils – could be informative for elucidating all of the ways religiosity and fear of death might co-vary.

Conclusions

This study addresses a still-to-be settled issue having to do with links between religiosity and a universal primal human concern. Overall, the findings cast doubt upon predictions by the buffering hypothesis, since we found evidence in three countries that religiosity tends to be positively correlated with fear of death. Regarding the possibility that the relationship is actually curvilinear (with moderately religious individuals having the greatest fear), we found modest support in the United States sample, but not in the Malaysian or Turkish sample. However, even in the United States, the curvilinearity in the religiosity-fear of death relationships was still in the context of a positive linear trend. In the discussion, we offer a new theory – called *death apprehension (DA) theory* – to explain how religiosity may interact with other variables to affect people's varying fears of death.

Acknowledgements

We appreciate the efforts of the following persons in recruiting research participants for this study: Drew H. Bailey, Hasan Buker, David Geary, Richard D. Hartley, Richard Lippa, Emi Prihatin, David Puts, Anthony Walsh, and Alan Widmayer. We are also grateful to all who were kind enough to complete a copy of the questionnaire.

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